

Effectiveness of Self Instructional Module on Knowledge Regarding Prevention of Microvascular and Macrovascular Complications among Patients with Diabetes Mellitus

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Abstract: ***Aim-**To assess the effectiveness of self instructional module on knowledge regarding prevention of microvascular and macrovascular complications among patients with diabetes mellitus. **Methodology -** The research approach adopted for this study is an evaluative approach. The research design selected for this present study was Quasi-experimental design one group pretest posttest design. The sample size consists of 40 diabetes mellitus patients; Non probability purposive sampling technique was used to select the respondents. A structured knowledge questionnaire was administered to assess knowledge of diabetic patients regarding prevention of Micro & Macrovascular complications of diabetes mellitus. **Findings-** majority of the 14(35%) diabetes mellitus patients belongs to the age group of 40+ (i.e. 40-50 years). Majority of the respondents 25(62.5%) were male and 38(95%) were married. Maximum number of respondents 38(95%) were Hindu by religion. Most of the respondents 17 (42.5%) had taken secondary education and 19(47.5%) were employed. Maximum number of respondents 17(42.5%) had their family monthly income 15001 & above. Regarding duration of illness, maximum number of respondents 19(47.5%) had diabetes mellitus since 1-5 years and 38(95%) patients had some amount of knowledge about complications of diabetes mellitus. Maximum number of the respondents 33(82.5%) received information about diabetes mellitus from television, and 31(77.5%) received information from Newspaper. After the administration of SIM the pre test and post test analysis revealed that, in pre-test majority 30 (75%) patients had average knowledge, 3 (7.5%) had Good knowledge, and 7(17.5%) had poor knowledge in total knowledge score where as in post-test majority of 28(70%) had average knowledge, 8(20%) had poor knowledge and 4(10%) had a good knowledge. **Conclusion-** SIM was found to be a very effective method of providing information regarding prevention of microvascular and macrovascular complications.*

Keywords: Microvascular, macrovascular, complications, insulin, hyperglycemia, hypoglycemia.

1. Introduction

Learning is the addition of new knowledge and experience. Interpreted in the light of past knowledge and experience. Teaching and learning is an integral part of nursing. Nurses have the responsibility to educate patients related to various aspects and keep themselves updated. Various teaching strategies are used to increase knowledge, such as lecturing, demonstration, discussion and self-education. These methods of self-education has an advantage over the others as the learner can educate himself at his own pace and it also stresses on rereading [1]. The word diabetes was coined by Aretaeus of Cappadocia. The word is taken from Greek diabainein, and literally means "passing through", or "siphon", a reference to one of diabetes' major symptoms of excessive urine discharge. The ancient Chinese tested for diabetes by observing whether ants were attracted to a person's urine, and called the ailment "sweet urine disease [2]".

Diabetic microvascular complications results from changes in the small blood vessels and are diabetic retinopathy which leads to visual complications, diabetic neuropathy which are group of diseases that affect all types of nerves, and diabetic nephropathy causes renal dysfunctions. Diabetic macrovascular complications results from changes in the medium and large blood vessels. The three main types of macrovascular complications that occur more frequently in

the diabetic population are cardiovascular, cerebrovascular and peripheral vascular diseases [3].

Diabetes reduces life expectancy by five to ten years. Premature cardiovascular disease is the most common cause of morbidity and mortality, but the micro vascular complications specific to diabetes are also contributory factors. Diabetes is the most common reason for renal replacement therapy worldwide, the most common cause of blindness in the under 65s, and the most common cause of non-traumatic amputation. The onset of complications reduces quality of life, particularly when both micro vascular and macro vascular disease are present [11].

2. Need for the Study

The World Diabetes Day which falls on November 14th embodies the theme "Diabetes Education and Prevention", which will pervade all through the campaign during 2009-2013[12]. At present, India is considered as the diabetic capital of the world. There are approximately 3.5 crore diabetics in India, and this figure is expected to increase up to 7.94 crore by 2030. In Maharashtra 44 lakhs people are suffering with the diabetes mellitus and another 69 lakh people are with pre-diabetes in the state. 10.3% of Maharashtra's urban population had diabetes; the corresponding figure for rural areas is 6.2%. Around 3.2 million deaths every year are attributable to complications of

diabetes; six deaths every minute [13]. Diabetes mellitus has become a common disease that leads to chronic complications like neuropathy, nephropathy, retinopathy, CVA and cardiac diseases. There is significant risk in the incidence of diabetes mellitus in India. Development of chronic complications is related to the number of years of diabetes mellitus. This is particularly alarming in developing countries like India where life expectancy is increasing rapidly. Diabetes mellitus patients are living longer because of better treatment modalities, thus preventing acute complications and premature deaths. Because of these impacts there is an increased diabetes mellitus population at a higher risk of developing chronic diabetes complications. The chronic complications of diabetes mellitus translate into a significant economic burden on the individual and the community because the treatment is expensive [11].

Diabetes related complications are coronary artery disease, peripheral vascular disease, neuropathy, retinopathy, nephropathy, etc. People with diabetes are 25 times more likely to develop blindness, 17 times more likely to develop kidney disease, 30-40 times more likely to undergo amputation, two to four times more likely to develop myocardial infarction and twice more likely to suffer a stroke than non-diabetics [14]. A study conducted The Result of study shown that hypertension can be prevented in patients with type II with weight reduction and tight control of blood pressure which is essential for the reduction of microalbuminuria as well as further micro- and macrovascular complications of diabetes mellitus [15].

A prospective observational study was shown that type-II is associated with more risk of diabetic complications [16]. The incidence and prevalence of complications related to diabetes mellitus are high and consuming the major part of healthcare services. The researcher came across many diabetic patients during the time of clinical postings and found that patients lack knowledge about the complications of diabetes and its prevention. It is observed by researcher that macro and micro vascular complications are common in diabetic patients which are poorly responds to treatment.

3. Literature Survey

According to Shinde M (2007) Review of literature is important for having a broad understanding of the problem. "The material gathered in literature review should be an integral part of research data. Since what is found in the literature does not only have the influence which is important for formulating the problem and design of research, but also provides useful comparative material, when the data collected in the research is analyzed [10]." A review of related literature gives an insight into the various aspects of the problems under study. The review serves as an integrated function that facilitates the accumulation of knowledge. Hence, review of literature is important to a research in order to know what has been established and documented [10].

3.1 Studies related to effectiveness of educational programmes

Zagade, T.(2006). Concluded in their study learning package (c.d.rom) was effective in practice of staff nurses in neurological assessment [4]. Shinde,M.(2014) concluded that demonstration regarding feeding of hemiplegic patient among caregivers was effective in increasing the skill of the caregivers regarding feeding of hemiplegic patient [5]. Babu , R. L. (2014) the findings of the study concluded that care takers had inadequate knowledge regarding non-curative care of terminally ill cancer patients. The planned education programme on non-curative care of terminally ill cancer patients was highly effective in improving the knowledge of care takers regarding non-curative care of terminally ill cancer patients [6]. Anjum,S.(2014)conducted study to assess knowledge of contraceptives methods and appraisal of health education among married women and concluded After the health education married women knowledge was improved to 100% about female sterilization followed by condom 99%, skin implants 86%, oral pills 85% and emergency contraceptives 85%.Sociodemographic variable were significantly associated with existing knowledge and level of married women specially age at marriage, age at first child, occupation,, income ,education [7],[8]. Kadam,A.(2014) found that Structured education programme was highly effective to improve the knowledge score and to improve the attitude score of subjects/ caregiver towards colostomy care of patient [9].

A study was conducted by Tien K, Hung H,& Hsiao J results shows that, the comprehensive diabetes care program effectively improves glycemia and cholesterol control. Therefore diabetic education should be offered to patient as close to the time of diagnosis [17]. A randomized prospective study suggested that, well informed and motivated patients were more insistent and maintain target values of the main risk factors of diabetic complications [18]. A population based cross sectional study shown that dyslipidemia was associated with more micro and macro vascular complications in diabetes mellitus [19].

A study was showed that substantial evidence supports screening all patients with diabetes to identify those at risk for foot ulceration. These patients might benefit from certain prophylactic interventions, including patient education, prescription footwear, intensive podiatric care, and evaluation for surgical interventions [20].

An experimental study was conducted by Suppapitporn S. Chindavijak.B. & Onsanit S. in Bangkok, concluded that a wide variety of education, drug taken behavior and health care provider available communication produce improvement in patient management [21]. A intervention study was conducted by Raman Kutty V, Joseph A, & Soman CR The results suggests that majority of patients had low levels of knowledge regarding different aspects of Type-2 diabetes. After implementation of the educational message, a significant improvement was revealed in patients' knowledge. The conclusion drawn was health education was an effective tool that implicated change in diabetic patients' knowledge [22].

A experimental study was conducted by Sheldon H. Horowitz, The results suggest that SIM strategy may serve as a means of interaction for optimal learning [23]. A study was conducted by Saurabh J, Sharma P, Maheshwari BB, Gupta AK, Gupta A, & Bist HK, The result of study shown that, prevalence of retinopathy in Group 1 was 34.4%, in group 2 was 12.4% in type-II diabetes mellitus as compared to type-I and group 3 which was 25.5%. The difference was statistically significant showing that diabetic retinopathy is associated with all the types of diabetes mellitus with more incidences in type-I diabetes mellitus. As duration increases prevalence of diabetic retinopathy also increases. It was 8.9% in <5 years duration and 89.0% in 11-15 years and 100% in cases with >15 years of diabetes. The incidence of nephropathy and neuropathy are also more in all types of diabetes mellitus [24].

A study was conducted by Chowdhury TA, & Lasker SS The study states that South Asians are having a higher prevalence of established micro vascular and macro vascular disease, compared to Europeans, and a higher risk of coronary artery disease, predominantly because of lower HDL cholesterol and higher blood pressure. The patients were assessed for signs of macro vascular disease, retinopathy, neuropathy and nephropathy. Cardiovascular risk factors were also determined. Result shown that, complications was common at diagnosis, with a quarter of all patients having evidence of at least one diabetic complication [25]. A study was conducted by Sureka Rani H, Madhavi G, & Ramachandra Rao The result shown that postprandial plasma glucose level, total cholesterol, low-density lipoproteins, triglycerides were high in type-I diabetes mellitus and the levels of high density lipoproteins were low in the type-II diabetics compared to controls. The markers of free radical induced injury i.e. malondialdehyde and nitrite/nitrate were high while total antioxidant status a marker for antioxidant protection against reactive oxygen species was low in diabetics compared to controls [26].

A cross sectional study was conducted by Bamashmus MA, Gunaid AA, & Khandekar RB .to determine the magnitude and risk factors of diabetic retinopathy (DR) on 350 patients suffering from diabetes mellitus among which the duration of diabetes was ≥ 15 years in 101 (29%) patients attending an eye hospital. Vision, ocular pressure, ocular media and posterior segment were assessed by using bio-microscope and Volk lens. Risk factors of DR like age, sex, duration of diabetes and hypertension were evaluated. Using univariate and multivariate analysis it is found that the prevalence of DR was 55%. The proportions of background diabetic retinopathy, preproliferative diabetic retinopathy, proliferate diabetic retinopathy and diabetic macular edema were 20%, 13%, 17% and 22% respectively. The prevalence of blindness among DM patients was 16%. The prevalence of cataract and glaucoma was 34.3% and 8.6% and duration of DM was the predictor of DR. One-fifth of the patients had sight-threatening DR and concluded that DR was of public health magnitude among patients [27].

A study was carried out by Joshi Yogesh, Pant Reena, Mittal Piyush, Juyal Vijay, & Dr Agrawal AC Study showed that 76.66% patients among males and 55.83% patients among

females were taking medicines regularly. The non-compliance shown by study population could be the cause of poor therapeutic outcome. It was concluded from the study that a major educational effort is required to inform the diabetes patients about the risk factors and complications. To overcome the ever rising problem of non-compliance, patient counseling needs to be encouraged among the diabetes patients [28].

In the cross-sectional study conducted by Kaur K, Singh MM, Kumar, & Walia I at Chandigarh, of the 60 diabetic individuals 48 subjects knew that sweets and fatty foods should be avoided but only 18.3% were avoiding them, monitoring of blood sugar was poor (46.7%), oral anti-diabetic drug compliance rate was 62.9% and none of the patients on insulin injections knew about self therapy [29].

4. Methodology

According to Shinde M (2007), Research approach refers to the overall plan for obtaining answers to the research questions and for testing the hypothesis. The research designs spells out the strategies that the researcher adopts to develop information that is accurate, objective and interpretable and it helps the researcher in selection of subjects, manipulation of independent variable, observation of a type of statistical analysis to be used to interpret the data[10]. The classical approach for the conduct of evaluative research.

4.1 Research Design

Research design is defined as "A researcher overall plan for obtaining answer to the research question or for testing hypothesis [10]". one group pre-test post-test design was used.

4.1.1 Independent variables

In the present study the self instructional module on prevention of micro and macro vascular complications of diabetes mellitus was the independent variable.

4.1.2 Dependent variables

The outcome variable of interest; the variable that is hypothesized to depend on by another variable is called dependent variable.

4.1.3 Extrenous variables

The demographic variables in this study were age, sex, marital status, religion, education status, occupation, income, duration of illness and source of information.

4.1.4 Setting of the Study

The research setting was Krishna hospital, karad which is a 850 bedded multispeciality hospital.

4.1.5 Population

The accessible population for the study is diabetes mellitus patients without any micro & macro vascular complications registered in Krishna hospital at Karad.

4.1.6 Sample

In the present study the sample diabetes mellitus patients. Sample includes both male and female subjects.

4.2 Sample Size & Sampling technique:-

The sample size considered for the study was 40 diabetic patients. In the present study the purposive sampling technique was adapted to select subjects.

Inclusion criteria:

Patients those who are-

1. Diagnosed with Type-II Diabetes mellitus.
2. Willing to participate in the study.
3. Available at the time of data collection.
4. Able to read English Or Marathi.

Exclusion criteria:

Patients with-

1. Micro & macro vascular complications of diabetes mellitus.
2. Associated neurological disorders manifesting altered sensorium.

5. Results/ Discussion

Section-A

Distribution of Diabetes mellitus patients according to socio-demographic variables. (Sample characteristics)

The data on sample characteristics revealed that out of 40 diabetic patients,

- Majority of the 14(35%) diabetes mellitus patients belongs to the age group of 40+ (40-50 years).
- Maximum respondents 25(62.5%) were males.
- Many of them respondents 38(95%) were married.
- Maximum number of respondents 38(95%) were Hindu by religion.
- Most of the respondents 17 (42.5%) had taken secondary education.
- Majority of the respondents 19(47.5%) were employed
- Maximum number of respondents 17(42.5%) had their family monthly income 15001 & above.
- Regarding duration of illness, maximum number of respondents 19(47.5%) had diabetes mellitus since 1-5 years
- Majority of the respondents 38(95%) patients had some amount of knowledge about complications of diabetes mellitus.
- Maximum number of the respondents 33(82.5%) received information about diabetes mellitus from television, and 31(77.5%) received information from Newspaper

Area wise Frequency and Percentage distribution of knowledge scores of Diabetic patients regarding diabetes mellitus revealed that in pre-test majority 29 (72.5%) patients had average knowledge, 8 (20%) had Good knowledge, and 3 (7.5%) had poor knowledge; where as in post-test majority of all 40(100%) had average knowledge regarding diabetes mellitus.

Area wise Mean, Standard Deviation of knowledge score of subjects regarding diabetes mellitus revealed that the pre test mean knowledge score and standard deviation of the diabetic patients was 2.42 ± 1.29 , which was increased in post-test to 3.82 ± 0.71 . Obtained pre and post-test scores paired t value is 6.934 and p value is < 0.0001 which is considered extremely significant.

5.1 Findings related to pretest and post test knowledge about microvascular complications of diabetes mellitus.

Area wise Frequency and Percentage distribution of knowledge scores of Diabetic patients regarding microvascular complication revealed that in pre-test majority 30 (75%) patients had average knowledge, 7 (17.5%) had Good knowledge, and 3 (7.5%) had poor knowledge; where as in post-test majority of 31(77.5%) had average knowledge, 6(15%) had Good knowledge and 3(7.5%) had a poor knowledge.

Area wise Mean, Standard Deviation of knowledge score of subjects regarding microvascular complication revealed that the pre tests mean knowledge score and standard deviation of the diabetic patients was 5.2 ± 1.28 , which was increased in post-test to 7.1 ± 1.27 . Obtained pre and post-test scores paired t value is 9.72 and p value is < 0.0001 which is considered extremely significant.

5.2 Findings related to pretest and post test knowledge about macrovascular complications of diabetes mellitus.

Area wise Frequency and Percentage distribution of knowledge scores of Diabetic patients regarding macrovascular complication revealed that in pre-test majority 32 (80%) patients had average knowledge, 4 (10%) had Good and 4(10%) had poor knowledge; where as in post-test majority of 30(75%) had average knowledge, 9(22.5%) had Poor knowledge and 1(2.5%) had a good knowledge.

Area wise Mean, Standard Deviation of knowledge score of subjects regarding macrovascular complication revealed that that the pre tests mean knowledge score and standard deviation of the diabetic patients regarding Macrovascular Complications of diabetes mellitus was 4.87 ± 1.91 , which was increased in post-test to 7.57 ± 1.43 . Obtained pre and post-test scores paired t value is 8.58 and p value is < 0.0001 which is considered extremely significant.

5.3 Findings related to pretest and post test knowledge about prevention of microvascular and macrovascular complications of diabetes mellitus.

Area wise Frequency and Percentage distribution of knowledge scores of Diabetic patients regarding prevention of microvascular & macrovascular complication of diabetes mellitus revealed that that in pre-test majority 28(70%) patients had average knowledge, 7 (17.5%) had Good knowledge, and 5(12.5%) had poor knowledge; where as in post-test majority of 27(67.5%) had average knowledge, 6(15%) had Good knowledge and 7(17.5%) had a poor knowledge.

Area wise Mean, Standard Deviation of knowledge score of subjects regarding prevention of microvascular & macrovascular complication of diabetes mellitus revealed that the pre tests mean knowledge score and standard deviation of the diabetic patients was 12.25 ± 3.17 , which was increased in post-test to 18.02 ± 1.31 . Obtained pre and post-test scores paired t value is 10.93 and p value is < 0.0001

which is considered extremely significant and paired 't' test showed a significant gain in knowledge.

5.4 Findings related to overall (Total) pretest and post test knowledge about prevention of microvascular and macrovascular complications of diabetes mellitus.

Area wise Frequency and Percentage distribution of total knowledge scores of Diabetic patients regarding prevention of microvascular & macrovascular complication of diabetes mellitus revealed that that in pre-test majority 30 (75%) patients had average knowledge, 3 (7.5%) had Good knowledge, and 7(17.5%) had poor knowledge in total knowledge score where as in post-test majority of 28(70%) had average knowledge, 8(20%) had poor knowledge and 4(10%) had a good knowledge.

While assessing the effectiveness of SIM, Area wise Mean, Standard Deviation of total knowledge score of subjects regarding prevention of microvascular & macrovascular complication of diabetes mellitus revealed that that the pre tests mean knowledge score and standard deviation of the diabetic patients was 24.75 ± 5.62 , which was increased in post-test to 36.52 ± 2.48 . Obtained pre and post-test scores paired t value is 14.198 and p value is < 0.0001 which is considered extremely significant and paired 't' test showed a significant gain in knowledge.

The above finding shows that in pretest the knowledge on prevention of micro and macro vascular complications in diabetes mellitus is inadequate and these findings are supported by the following A study was conducted on knowledge of diabetes, its treatment and complications amongst diabetic patients in a tertiary care hospital shown that increasing patient knowledge regarding disease and its complications has significant benefits with regard to patient compliance to treatment and to decrease complications associated with the disease. Of the 101 samples, patients' knowledge regarding the treatment and complications of diabetes showed serious deficiencies more so among women, even though most had been diabetic for years. In this present study, only 57.4% of the patients know that feet are affected in diabetes, 64.4% knew that diabetes affects the heart, and only 26.7% of the patients knew that kidneys are affected. The present study concluded that the patients' knowledge about the treatment and complications of diabetes is limited especially with regards to preventive aspect [3].

The findings is supported by a randomized prospective study conducted on teaching of patient to monitor the risk factors and retard the progress of vascular complications in high risk patients with type II diabetes mellitus. The aim of the study was to examine whether therapeutic responsibility with the patient will improve the outcome, A 165 patients with type II diabetes mellitus, hypertension and hyperlipidemia were randomly allocated to standard annual consultation. Physicians administered the medical care for both groups. The study shown that, well informed and motivated patients were more insistent and maintain target values of the main risk factors of diabetic complications [30].

Statistical analysis using chi-square test to find the association between pre-test knowledge scores on prevention

of micro vascular and macro vascular complications of diabetes mellitus with selected socio-demographic variables revealed that the variables age, sex, marital status, religion, educational status, occupation, family monthly income, period since diagnose as a diabetic, information about complications of diabetes mellitus, and various source of information in relation with the pretest knowledge of diabetic patients are independent of each other and was not significant at 0.05 level of significance. So, there was no any significant association in between the pre-test knowledge scores on prevention of micro vascular and macro vascular complications of diabetes mellitus with selected socio-demographic variables. There is no any significant association exists between pre-test knowledge scores on prevention of micro vascular and macro vascular complications of diabetes mellitus with selected socio-demographic variables at 0.05 level of significance hence H_3 rejected.

Conclusion: Based on the findings the result of the study shows that the total pretest mean knowledge score of the diabetes mellitus patients was 24.75, which indicates that the patients had inadequate knowledge regarding micro and macro vascular complications of diabetes mellitus and their prevention. In the posttest the mean knowledge score of the diabetes mellitus patients was 36.52 in which there is a significant difference of 11.77 which is a net benefit to the patients due to the effectiveness of self instructional module.

Future scope: It is the context of finding out weather a self instructional module can effectively influence and enhance the knowledge on prevention of complications of diabetes mellitus among diabetic clients that this study was undertaken. The present study enabled the diabetes mellitus patients to gain knowledge on prevention of micro and macro vascular complications. The study also helped the patients to improve quality of life and decrease the economic burden.

6. Scope of Study

The expanded role of the professional nurse emphasizes those activities, which promotes health and preventive behavior among the people. In hospital setups nurses plays an important role.

- Nurses can plan educational sessions on prevention of diabetic complications by which number of readmission to the hospital can be significantly reduced.
- Nurses working at out-patient department must try to spend some time with diabetic patients by which teaching and training programmes can be conducted on deficient areas such as diet, self care activities (foot care and nail care), exercises and medications.
- Nurses should place health in the hands of the patient especially for the diabetic clients as they are in need of long term care. The self instructional module developed by the investigator can be used by the nurses to educate the diabetic clients for prevention of micro & macro vascular complications of diabetes mellitus.

Implication for nursing education:

- Findings of the study have implications for nursing education too. Nurse educators should use different teaching strategies to educate student nurses in enhancing knowledge and skills in theory as well as practice.
- Nurses at the post graduate level need to develop skills in preparing Health teaching materials in various specialized areas at the level of patients understanding.
- As a nurse educator, there is opportunity, in ample measure, for the nursing professional to educate the diabetic clients and provide care in the clinical setting.
- Making use of advanced technology like LCD projector and power point presentations not only improves the performance of the teacher but also helps the learner to capture every detail meticulously due to colorful, designed focused display of matter with appropriate pictures. Nurse educator can plan the interactive methods such as case studies, role play, group discussions, workshops, and seminars and bed side clinics to provide updated knowledge to the students in the field of prevention of complications diabetes mellitus.
- The study emphasizes the significance of the short term course for in service nurses in advanced knowledge on care of diabetics and in making use of facilities available in the management of diabetes mellitus.
- Health education programmes for the prevention of complications of diabetes mellitus can be organized by the nurse educator in hospital settings.

Implication for nursing research

- One of the aims of nursing research is to contribute the knowledge to the body of nursing, to expand and broaden the scope of nursing. This is possible only if nurses take initiative to conduct the further research.
- The research helps to plan new interventional strategies for the diabetes mellitus patients to prevent the long term complications.
- Research has the character of dependency. To do this study, knowledge is accumulated from many researches. This material and adopted methodologies will be a useful guide to the nursing researchers to find the right information from the target groups to shape up the truth.
- The study helps the nurse researcher to develop insight into the development of teaching module and materials for diabetics towards promotion of quality of life and prevention of complications of diabetes mellitus.

Implication for nursing administration:

The present study has proven effectiveness of teaching programme in enhancing the knowledge of diabetic patients regarding prevention of vascular complications. So the nurse administrator can take initiative to provide facilities to conduct such educational programmes in the hospital. The nurse administrator at various levels of health care delivery system should focus their attention to make the public conscious about the prevention of vascular complications. Administrator should organize Staff development programmes through continuing education, In-service education programmes, refresher courses and workshop for nurses and encourage them to participate in these activities.

The nursing administrator should take part in the making of health policy, development of protocols and standing orders with respect to Prevention of complications of Diabetes mellitus. The nursing administrator should concentrate on the proper selection, placement and effective utilization of the nurse in all areas giving opportunity for creativity, creating interest and enhance ability in educating the diabetics.

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